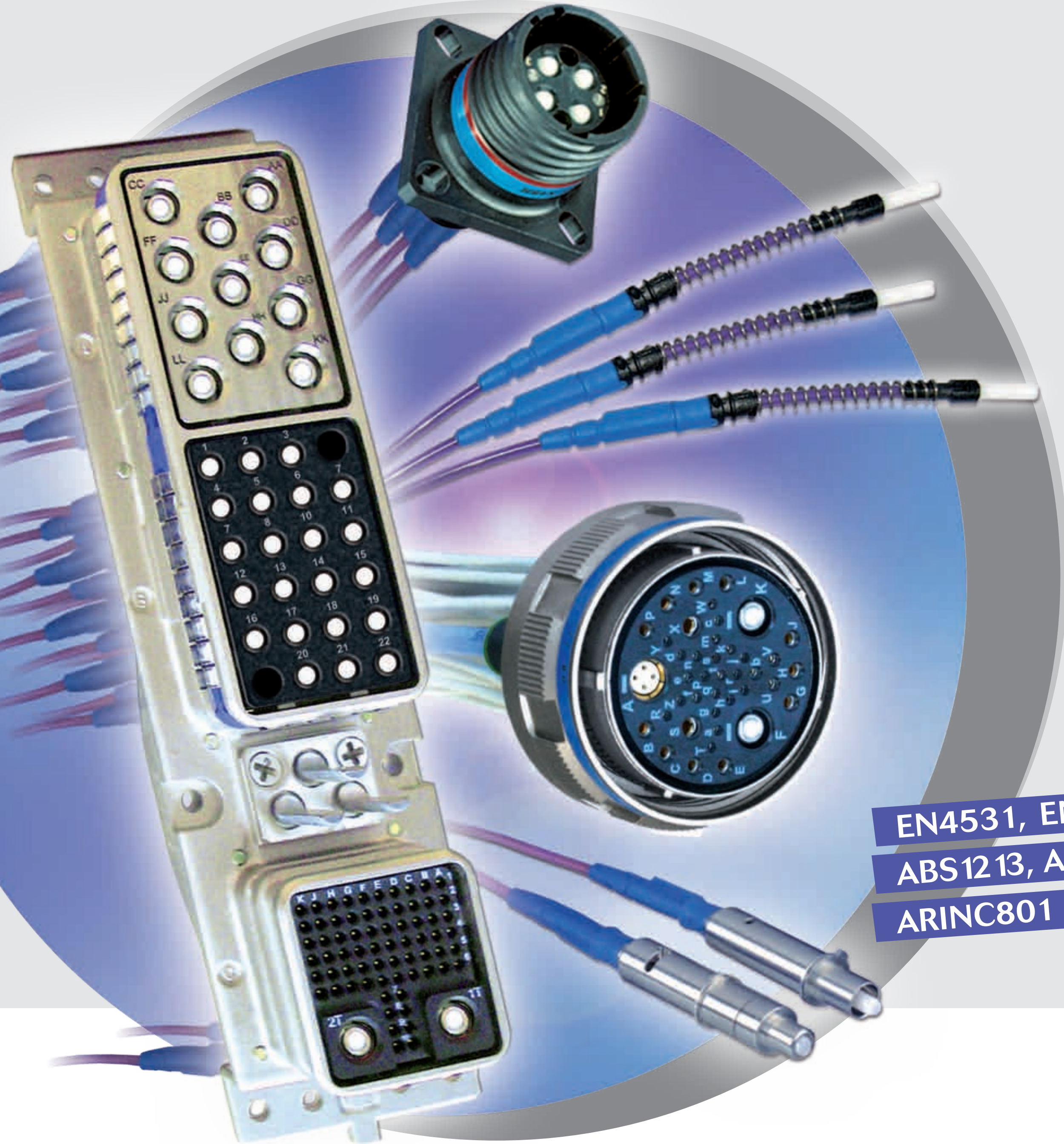


EN4531, EN4626
ABS1213, ABS1379
ARINC801

SOURIAU

ELIO®

Fiber Optic Technology

Esterline
Connection Technologies

ELIO® Fiber Optic Technology



Presentation

- Today's technology for Airborne & Military equipment is more and more complex, requiring the management of an increasing flow of information at greater speeds combined with the necessity to save weight.
- In response to this need, SOURIAU offers a wide range of copper and fiber optic solutions for high speed networks in harsh environments.
- Fiber optic is the best solution when high data-rate, EMI immunity and weight savings are required.
- The ELIO® terminus can handle data speeds from several Mbit/s up to several Gbit/s thanks to its excellent optical performance in the most severe environments. Its unique user-friendly design and its versatility accounts for the selection of ELIO® by major customers in various markets for their fiber optic applications.

Contents

FIBER OPTIC

ELIO® Fiber Optic Technology

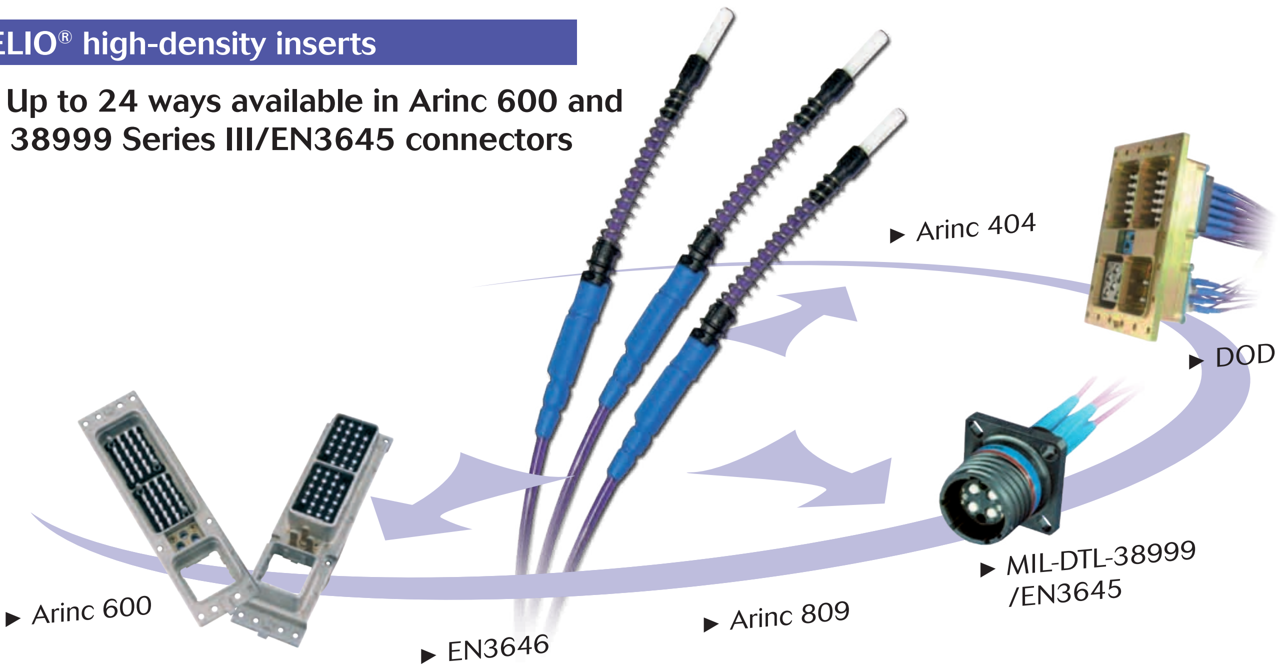
Overview

Features & benefits

The same contact in many connector types

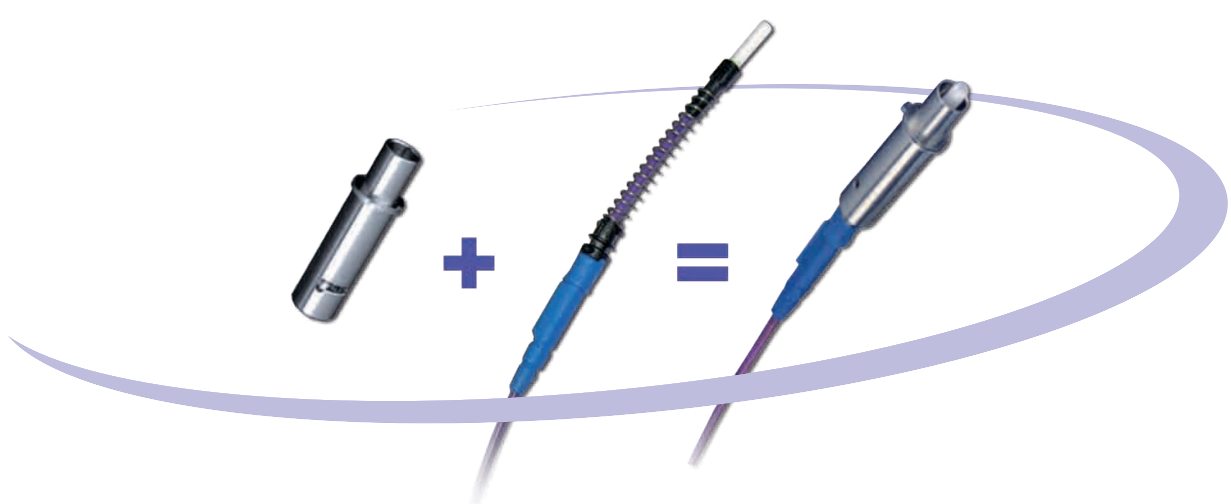
ELIO® high-density inserts

- Up to 24 ways available in Arinc 600 and 38999 Series III/EN3645 connectors



Standard #8 Quadrax cavity adaptor

- ELIO® contact can fit in any #8 Quadrax cavity using ELIO® AQ adaptors
- Many optical/electrical hybrid layouts available
- Use of standard electrical connectors
- For 38999 Series III/EN3645, Arinc 600 & 404, EN3646, DOD, EN3545

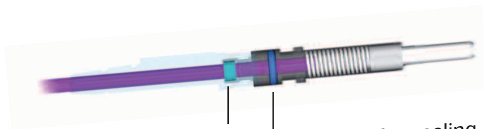


Features & benefits

Ruggedized

Sealed technology

- IP67: without backshell



Robust butt-joint contact

- Flight proven A380
- Standardized worldwide (Arinc 801 Appendix C, EN4531, Airbus qualified)
- Withstanding the most severe vibration levels (A400M)
- Excellent optical performances

User friendly

Easy to clean

- Easy to clean terminus without removing any part of the connector
- Easy access to the end face of both male and female contacts
  - No risk to damage the sleeve when cleaning
  - No risk to capture dust inside the sleeve cavity

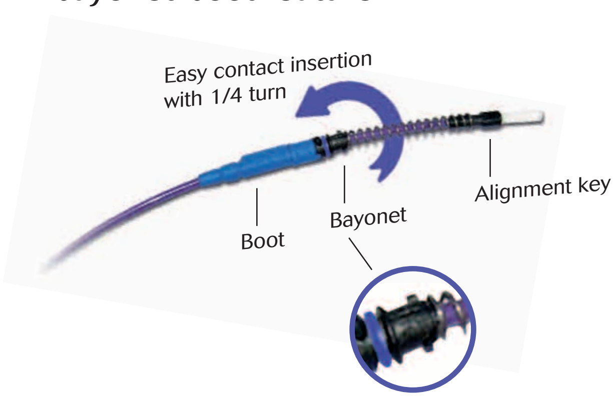


- **MIL-T-29504**
  Optical faces not accessible for cleaning in female insert

- **MIL-DTL-38999/EN3645 Souriau ELIO® connector**
  Optical faces accessible for cleaning !

Easy to install - no tool needed

- Terminus easy to install thanks to the bayonet-boot feature



Easy to terminate - less than 5 min

- Hermaphroditic terminus (same in receptacle and plug)
- ST®-like termination procedure
- Automatic polishing tools available

Range extension overview

Backshells

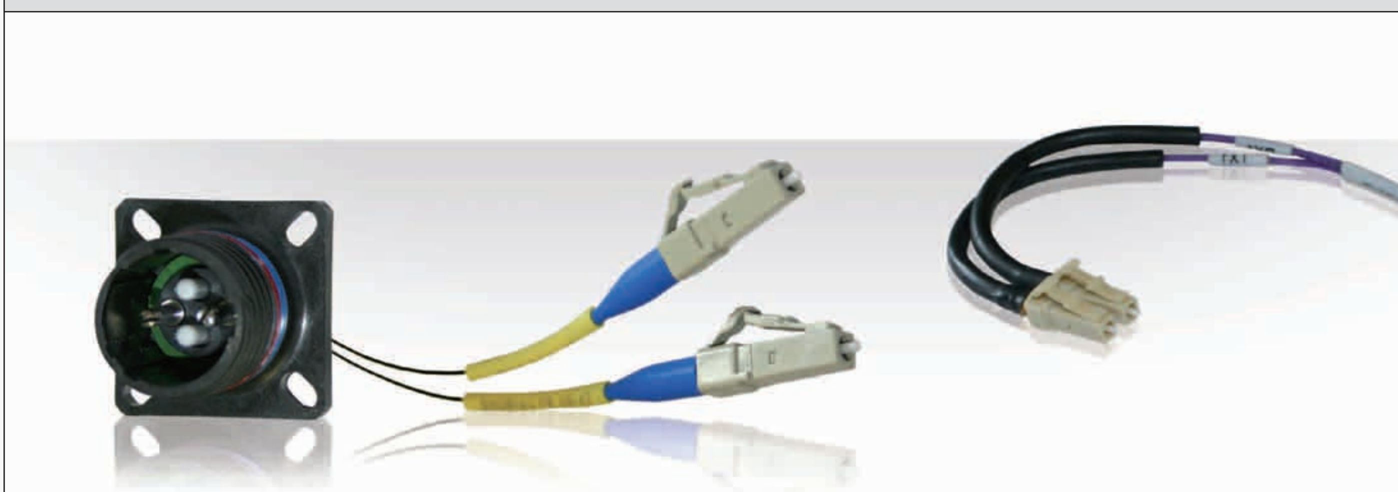


The ELIO® contact has a specific mating sequence: the cable moves back during the mating. To prevent interference with the ELIO® mating sequence, and to ensure the best optical performance, Souriau has developed a dedicated backshell range for MIL-DTL-38999 Series III/EN3645 ELIO® connectors.

4 types of backshell compatible with standard electrical MIL-DTL-38999 Series III/EN3645 rear interface are available.

See page 24

Harnesses & Patchcords



Fiber optic termination has a major impact on the product performance and therefore has to be done carefully.
Thanks to its in house fiber optics assembly line, equipped with the best control equipment, Souriau offers support from design through manufacturing on a wide range of Fiber Optic assemblies, from a simple patchcord to the most complex tactical harness.

See page 28

Range extension overview

Custom ELIO® connector overview

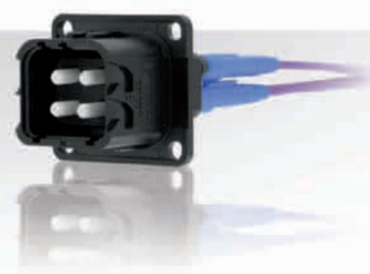
Hermetic 10^{-9} atm.cm^3/s



Push Pull



Quick Latch



Reinforced Sealing



Rack & Panel



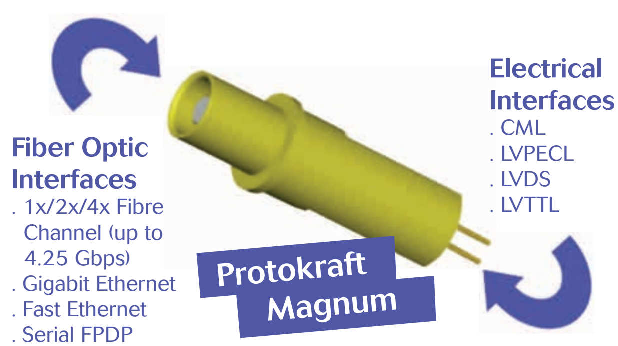
CONSULT US

Electro optic conversion with Protokraft

• Souriau and Protokraft combine Souriau's high performance ELIO® Fiber Optic Contact with Protokraft's Optical Transmitter and Receiver Technology to simplify avionics platform design and improve optical network performance and reliability.

Sabre Series
11-02





• A wide range of ELIO® intermateable integrated electro optic converter available at Protokraft: www.protokraft.com



ELIO® contact

- Robust spring-loaded butt-joint optical contact using ST style ferrule (diameter 2.5mm)
- Contact size equivalent to a #16 contact
- Anti-rotation of the contact for better vibration withstanding and optical performance
- Boot-grommet for rear sealing and protection of the cable against excessive bending
- Compatibility with loose and tight structure cables
- High level optical performance even after aging
- Bayonet locking system: no tool needed for mounting/dismounting
- Compatible with singlemode, multimode and POF cable

Technical features

Mechanical

- **Endurance:**
  Minimum 500 mating / unmating operations
- **Shock:**
  300 g, 3 ms as per EN 2591-6402 method A
- **Vibration:**
  In MIL-DTL-38999 Series III/EN3645 connectors:
  - Sine 5Hz to 3000Hz as per EN2591-6403 method A
  - Random as per EN2591-6403 method B
- **Cable cyclic flexing*:**
  100 cycles, load 40N as per EN2591-609
- **Cable pulling*:** 111N
- **Cable torsion*:**
  100 cycles, load 40N as per EN2591-611

Environmental

- **Salt spray:**
  See the connector standard
- **Temperature range*:**
  - 65°C to +125°C (1000 hours)
- **Rapid temperature change:**
  10 cycles - 65°C / +150°C (30min/30min)
- **Air leakage:**
  Max leakage 16 cm^3/h, 2 hours, 40kPa differential pressure
- **Damp heat and low temperature:**
  5 cycles of 48h -65°C/+70°C with stage at 40°C with 95% of humidity as per EN2591- 6303 method A

Optical

- **Multimode contact - Insertion Loss (IL):**
  0.1dB typical
  < 0.3dB over 95% of the samples as per EN2591-601,
  < 0.7dB maximum on 100% of the samples after tests
- **Multimode contact - Return Loss (RL):**
  > 21dB before and after tests as per EN2591-605
- **Singlemode contact - Insertion Loss (IL):**
  0.3dB typical
  < 0.5dB over 95% of the samples as per EN2591-601,
  < 0.9dB maximum on 100% of the samples after tests
- **Singlemode contact - Return Loss (RL):**
  > 55dB typical and > 50dB mininum

Resistance to fluids as per MIL-DTL-38999/EN3645 standard

- **Fuel:** JP5
- **Mineral Hydraulic fluid:**
  MIL-PRF-5606 (NATO H-515)
- **Synthetic hydraulic fluid:**
  AS1241 (Skydrol 500B4, LD4)
- **Mineral lubricant:**
  MIL-PRF-7870 (NATO O-142)
- **Synthetic lubricant:**
  MIL-PRF-23699 (NATO O-156),
  MIL-PRF-7808 (NATO O-148)
- **Cleaning fluid:**
  MIL-PRF-87937 diluted, Propanol, white spirit, Azeotrope R113 + Methanol
- **De-icing fluid:**
  AMS 1424 (NATO S-742)
- **Extinguishing fluid:**
  Chlorobromethane
- **Cooling fluid:**
  Coolanol

Ordering information

ELIO	09	N	G	L	A

Cable external diameter:
- **09:** 0.9 mm or cable wider than 1.9mm with 0.9mm jacket inside
- **18:** from 1.5mm to 1.9mm

Contact sealing:
- **W:** waterproof (1.8mm +/- 0.1mm cable only)
- **N:** non waterproof

Fibre type:
- **G:** 50 or 62,5/125 µm
- **D:** 100/140 µm
- **E:** 9/125 PC

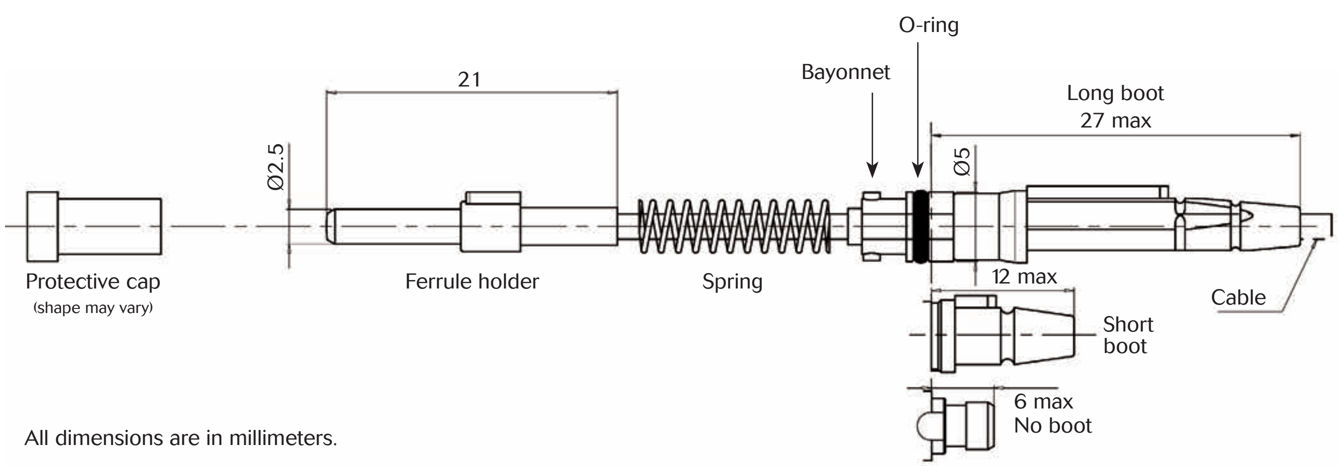
For POF cable please consult us.

Boot type:
- **L:** Long boot
- **S:** Short boot
- **N:** No boot (non waterproof version only)

Contact version index

Note: For ABS1379/EN4531 cross reference, please consult us.

ELIO® contact dimensions



All dimensions are in millimeters.

Recommended cables

SOURIAU can offer a wide range of cables in its assemblies, from low cost to high performance aeronautical cables.
ELIO® contact is compatible with singlemode and multimode cable, with tactical and breakout cable.
ELIO® contact is suitable with loose and tight structure cable.

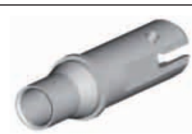
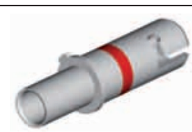
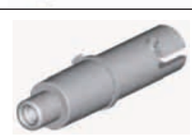
See ''Harnesses & Patchcords'' page 28.



ELIO® AQ
Adaptor for Quadrax #8 cavities

- ELIO® AQ is an adaptor to enable the ELIO® contact to fit in any #8 Quadrax cavities in several types of connectors. Therefore, any layout containing #8 cavities can be implemented with the ELIO® fiber optic contact
- Multiple possibilities to mix optical and electrical signals in the same insert
- Temperature range: -65°C to +125°C (cable limitation)
- 100% compliant with ELIO® contact optical performance
- Before use, please ask for "Technical Bulletin N°160 Mounting Instructions ELIO® AQ adaptor"

Ordering information

Insert type	Part Number		Drawing	Standard
	Multimode	Singlemode or recessed multimode contact		
Male Insert	ELIOAQ0P (1)			ARINC 404 (rear release) (2) ARINC 600 (rear release)
Male Insert	ELIOAQ1P			ARINC 404 (front release) (2) ARINC 600 (front release)
Male Insert	ELIOAQ4P			EN3646 EN3545 (2)
Male Insert	ELIOAQ6PB (1)			MIL-DTL-38999 Series III EN3645
Female Insert	ELIOAQ0S	ELIOAQ0S674		ARINC 404 (rear release) (2) ARINC 600 (rear release) EN3646 EN3545 (2)
Female Insert	ELIOAQ6SB (1)	ELIOAQ6SB674 (1)		MIL-DTL-38999 Series III EN3645

(1) Delivered with alignment boot.
(2) Not qualified by Souriau.

ELIO® training

. Need to **strengthen** your global knowledge in optical fiber?

. Need **support** for ELIO®'s use in the field?



Target your ELIO® training !

Souriau, in partnership with various training companies, offers training which can be adapted to your needs:

Installation Module

Fundamentals of fiber optics

Theoretical and **technological** aspects on the installation of **ELIO®** in an **aeronautical environment**, notably:
- *Handling precautions*
- *Optical faces inspections*
- *On-board optical measurement processes*

Practical applications

3-Days

Cabling Module

Fundamentals of fiber optic

Theoretical and **technological** aspects on **ELIO®** contacts terminating, notably:
- *Handling precautions*
- *ELIO® cabling process*
- *Control process by optical measurements*

Terminating practical applications during two and a half days

5-Days

For more information and a list of approved training companies, contact us at:

contactmilaero@souriau.com

FIBER OPTIC

ELIO® Fiber Optic Technology

Series & Extension

ELIO® Fiber Optic Technology



MIL-DTL-38999 Series III/EN3645 with ELIO® high density insert

- Standard MIL-DTL-38999/EN3645 shells without shielding ring (aluminum, composite, stainless steel, bronze)
- Environmental performance as per EN4531 based on MIL-DTL-38999/ EN3645
- Temperature range: - 65°C to +125°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.


Ground army


Civil aircraft

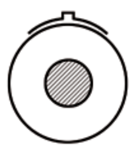

Marine


Military aircraft


Rotary wing

Layouts

09 – 01


1 optical way

11 – 02


2 optical ways

13 – 04


4 optical ways

15 – 06


6 optical ways

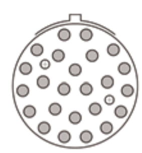
19 – 08


8 optical ways

21 – 12


12 optical ways

25 – 24


24 optical ways

Note: Layouts 15-06 and 21-12 limited availability, please consult us.

Ordering information

Composite, Aluminum & Stainless Steel

8D	5	E	11	W	02	A	N

Shell type:
- **5:** Plug
- **0:** Receptacle with 4-hole square flange fixing
- **7:** Receptacle with single hole jam nut fixing *(aluminum & stainless steel)*

Designation:
- **E:** ELIO® optical connector

Shell size:
- **09 - 11 - 13 - 15 - 19 - 21**
- **25** *(aluminum & stainless steel only)*

Plating:

Aluminum:
- **Z:** Zinc nickel
- **ZC:** Zinc cobalt
- **W:** Olive green cadmium
- **F:** Nickel

Composite:
- **J:** Olive green cadmium
- **M:** Nickel
- **X:** Without plating

Stainless steel:
- **K:** Passivated
- **S:** Nickel

Layouts: See page 16

Insert type:
- **A:** Male insert
- **B:** Female insert with ceramic alignment sleeves

Polarization:
- **N, A, B, C, D, E,**
- **U** (universal connector for testing - mates with any other polarization)

Specification:
- **None** or **674:** See table beside

Multimode Fiber		Singlemode Fiber	
Male Insert (A)	Female insert (B)	Male Insert (A)	Female insert (B)
None	**None**	**None**	
	674 (for recessed contact position)		**674**

JVS Bronze

JVS	E	6	A	11	02	A	N

Designation:
- **E:** ELIO® optical connector

Shell type:
- **6:** Plug
- **0:** Receptacle with 4-hole square flange fixing
- **7:** Receptacle with single hole jam nut fixing

Material:
- **A:** Bronze

Shell size: 09 - 11 - 15 - 13 - 19 - 21

Layouts: See page 16

Insert type:
- **A:** Male insert
- **B:** Female insert with ceramic alignment sleeves

Polarization: N, A, B, C, D, E

Specification:
- **None** or **674:** See table beside

Multimode Fiber		Singlemode Fiber	
Male Insert (A)	Female insert (B)	Male Insert (A)	Female insert (B)
None	**None**	**None**	
	674 (for recessed contact position)		**674**

Note: For ABS/EN4531 cross reference, please consult us.



MIL-DTL-38999 Series III/EN3645 with ELIO® AQ

Adaptor for Quadrax #8 cavities

- Compatible with standard MIL-DTL-38999 Series III/EN3645 Souriau connectors (aluminum, composite, stainless steel, bronze)
- Design ensures ELIO® optical performance
- Environmental performance as per MIL-DTL-38999 and EN3645 standard
- Temperature range: - 65°C to +125°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.



Ground army



Civil aircraft



Marine



Military aircraft

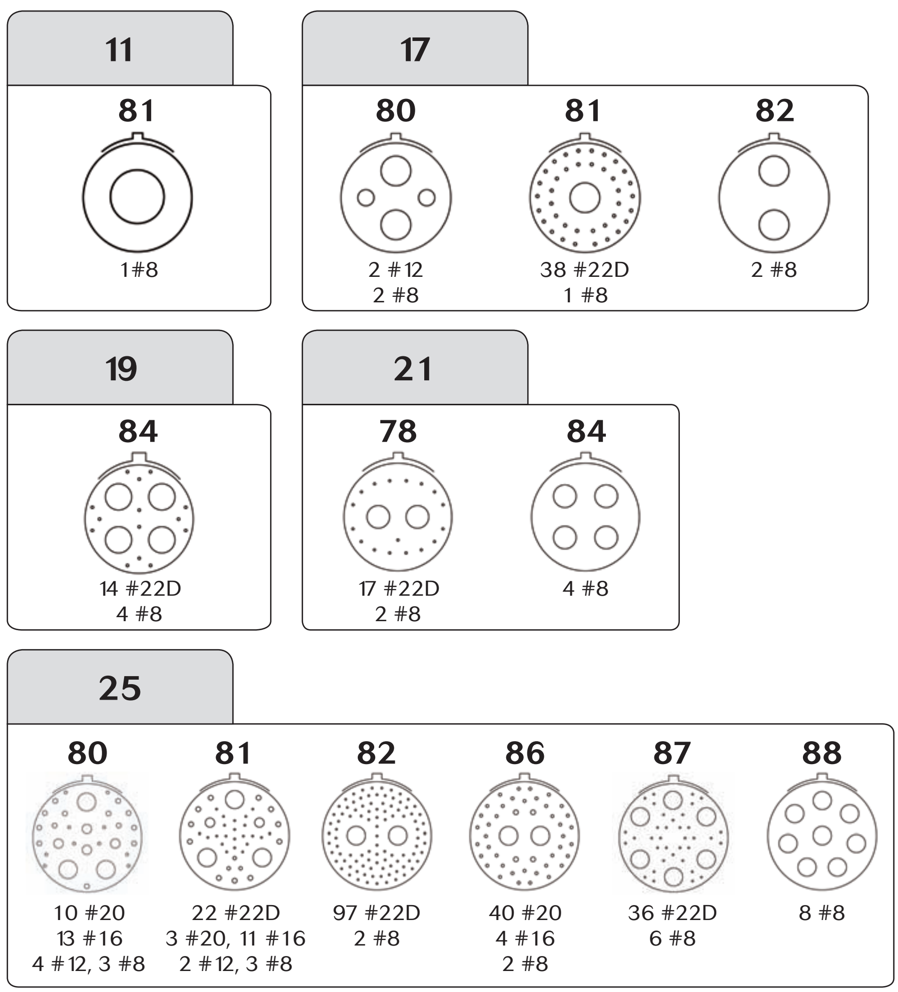


Rotary wing

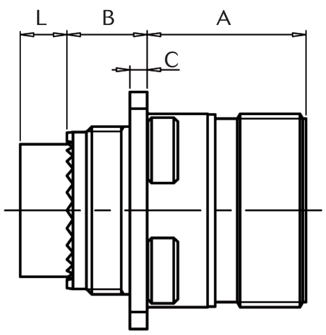
Ordering information

- See Souriau MIL-DTL-38999 Series III catalog.

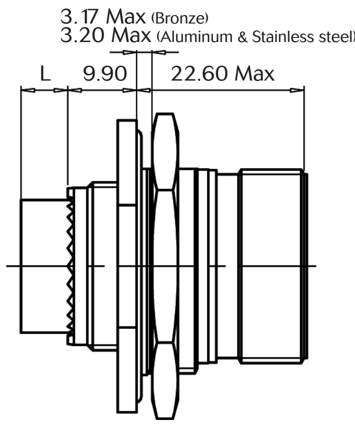
Layouts



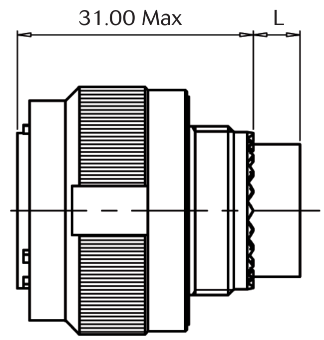
Dimensions



Type 0
Square Flange Receptacle



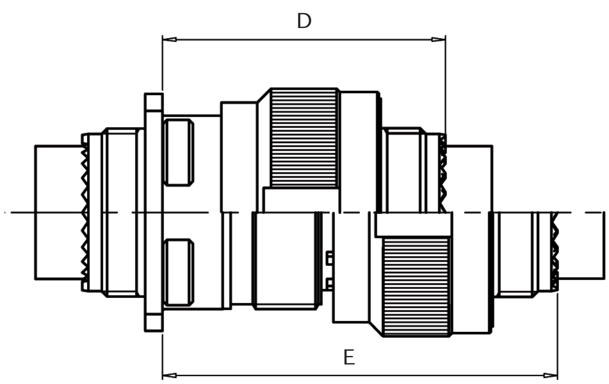
Type 7
Jam Nut Receptacle

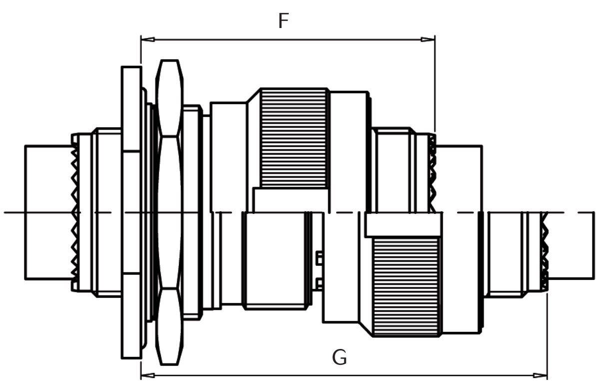


Type 5
Plug

	A		B		C	
	Shell size 09 to 19	Shell size 25	Shell size 09 to 19	Shell size 25	Shell size 09 to 19	Shell size 25
Receptacle Type 0 & 7 Metal	20.90 Max	20.10 Max	12.50 Max	13.00 Max	2.50 Max	3.20 Max
Receptacle Type 0 Composite	20.90 Max	20.10 Max	12.50 Max	13.00 Max	3.65 Max	4.35 Max

L	
Male insulator	Female insulator
4 Max	6.60 Max



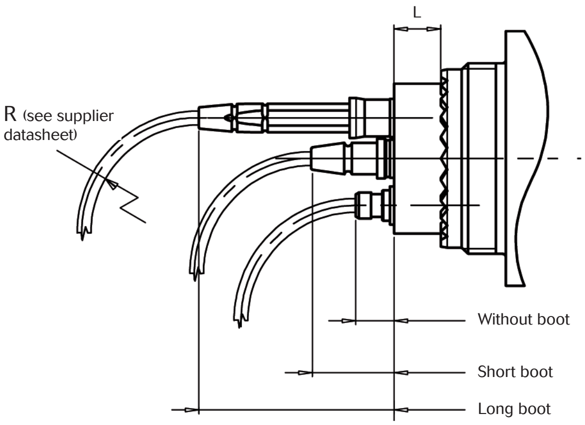


	D		E		F		G	
	Shell size 09 to 19	Shell size 25	Shell size 09 to 19	Shell size 25	Shell size 09 to 11	Shell size 13 to 25	Shell size 09 to 11	Shell size 13 to 25
Plug + Receptacle Type 0 & 7 Metal	**37.00 Max**	**36.50 Max**	**52.30 Max**	**51.50 Max**	**39.00 Max**	**39.00 Max**	**54.00 Max**	**54.00 Max**
Plug + Receptacle Type 0 Composite	**37.00 Max**	**36.50 Max**	**52.30 Max**	**51.50 Max**	**N/A**	**N/A**	**N/A**	**N/A**

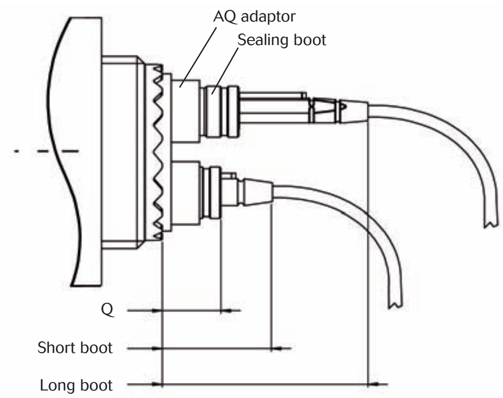
All dimensions are in millimeters.

Dimensions

38999 Series III/EN3645 with ELIO® contacts in ELIO® high-density insert



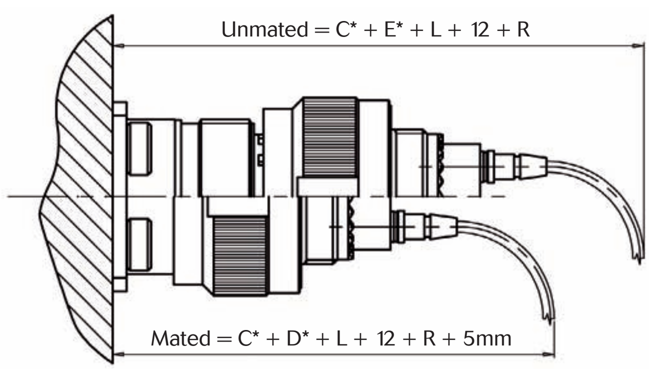
38999 Series III/EN3645 with ELIO® contacts in ELIO® AQ adaptors



	ELIO® high density insert					ELIO® AQ adaptors			
	L		Contact length			Q		Contact length	
	Male insulator	Female insulator	Without boot	Short boot	Long boot	Male insulator	Female insulator	Short boot	Long boot
Plug						11.80 Max	9.10 Max		
Square flange receptacle	4 Max	6.60 Max	6 Max	12 Max	27 Max	12 Max	9.30 Max	17.60 Max	32.60 Max
Jam nut receptacle						11.60 Max	8.90 Max		

Total length example

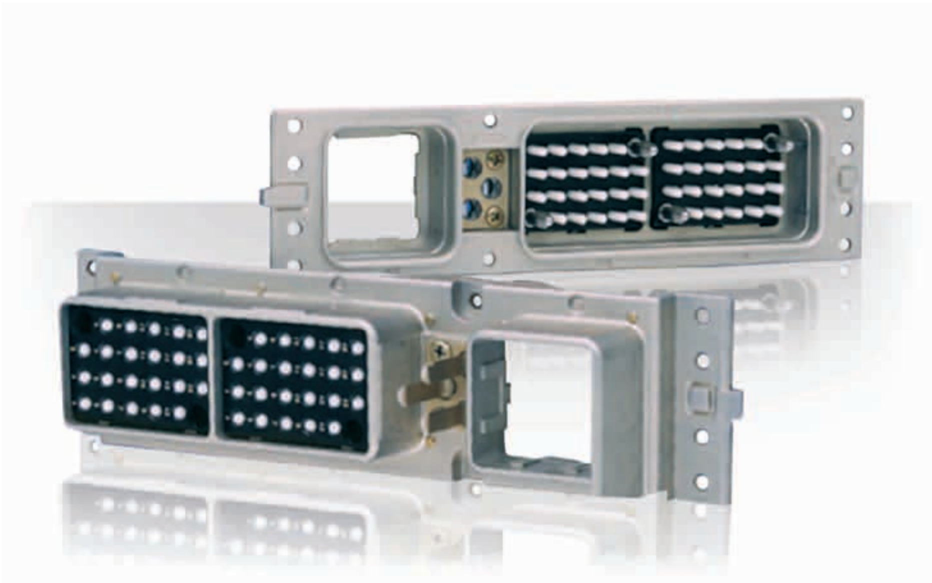
Square flange receptacle + plug + ELIO® contacts in ELIO® high-density insert



* See previous page.

All dimensions are in millimeters.

ELIO® Fiber Optic Technology



Arinc 600 Series with ELIO® high density insert

- Standard ARINC 600 Souriau shell
- High density ELIO® cavities
- Temperature range: -65°C to +125°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.



Civil aircraft



Ground army



Marine



Military aircraft



Rotary wing

Ordering information

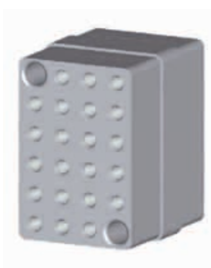
- See Souriau Arinc 600 Series catalog.

Layouts

High density insert - Arinc 600 shell size 2 & 3

Cavity A, B, D & E

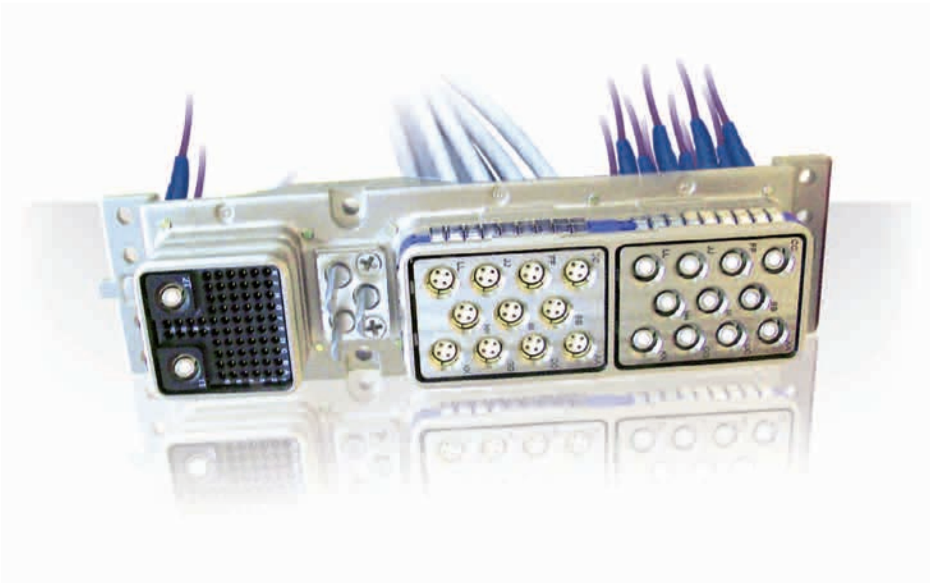
22 Elio



22 optical ways

Other: please consult us

ELIO® Fiber Optic Technology



Arinc 600 Series with ELIO® AQ

Adaptor for Quadrax #8 cavities

- Compatible with standard ARINC 600 Souriau connector
- Designed to ensure ELIO® contact optical performances
- Many possibilities to mix optical and electrical contact
- Temperature range: -65°C to +125°C (cable limitation)

Applications

- Fiber optic connector for all military and aeronautical applications wherever severe vibration or mechanical resistance are required.


Civil aircraft


Ground army


Marine


Military aircraft


Rotary wing

Ordering information

- See Souriau Arinc 600 Series catalog.

Layouts

Arinc 600 shell size 2 & 3

Cavity A, B, D & E

Q11 *	118Q2	C12Q6*
		
11 #8	118 #22 2 #8	12 #12 6 #8

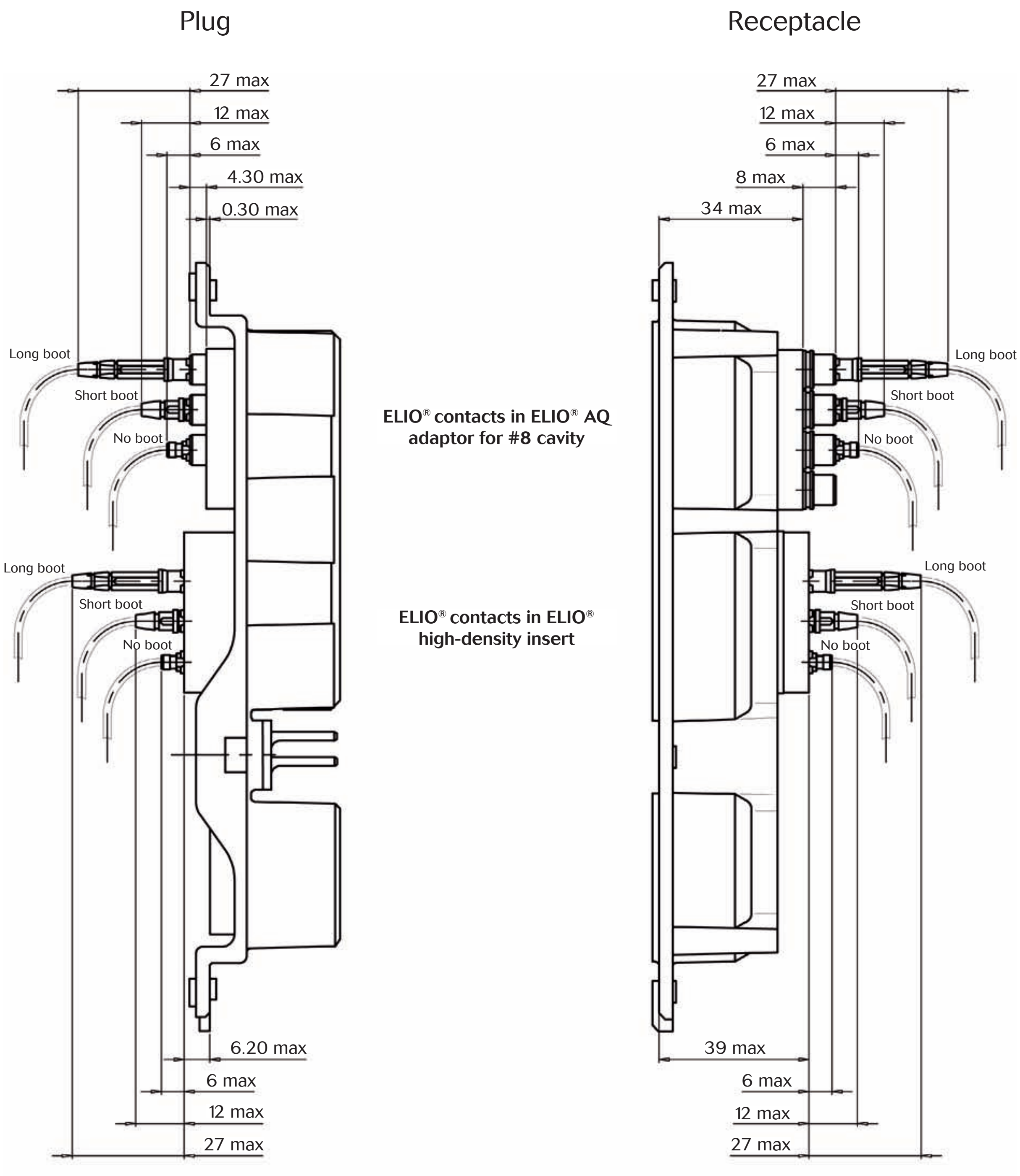
Cavity C & F

Q6*	68Q2	11Q2	62Q2	20Q4
				
6 #8	68 #22 2 #8	4 #20 3 #16 4 #12 2 #8	60 #22 2 #16 2 #8	20 #20 4 #8

* Grounded metal insert

Dimensions

Arinc 600 with ELIO® contacts



All dimensions are in millimeters.



Backshells

- The ELIO® contact has a specific mating sequence: the cable moves back during the mating. To avoid the ELIO® mating sequence to be disturbed and to ensure the best optical performances, Souriau has developed a dedicated backshell range for MIL-DTL-38999 Series III/EN3645 ELIO® connectors.
- There are 4 types of backshell available compatible with standard electrical MIL-DTL-38999 Series III/EN3645 rear interface.



Type 1: Adaptor for use with a standard 38999 Series III/EN3645 backshell. Caution is necessary in the choice of the standard backshell: it must allow enough room to accomodate the push back of the cable during the connector mating.



Type 2: Backshell for straight or right angled heat shrink boot (not supplied), suitable for tactical cables or protection tubes for example. Adapted to sealed and low mechanical retention applications.



Type 3: Backshell with cable gland suitable for tactical cables only. Adapted to sealed and high mechanical retention applications. See table p.26 for dimension code depending on the shell size and the cable diameter.



Type 4: Backshell derived from Type 3 without the cable gland. Suitable to adapt specific male threaded adaptors (not supplied) for ANAMET or PMA tubes for example. See table p.26 for the size of the female thread depending on the shell size.

Ordering information

8DABE	3	A	F	13	F	01

Type:
- **1:** Adaptor for standard 38999 Series III/EN3645 backshell (standard backshell not supplied)
- **2:** Backshell for straight or right angled heat shrink boot (heat shrink boot not supplied)
- **3:** Backshell with cable gland. See table p.26 for dimension code.
- **4:** Backshell for specific male threaded adaptor for PMA or ANAMET tubes for example (not supplied). See table p.26 for thread dimensions

Angle:
- **A:** Straight

For other angle, please consult us.

Coupling ring:
- **F:** Non self locking type

For other system, please consult us.

Shell size: 09, 11, 13, 19, 25

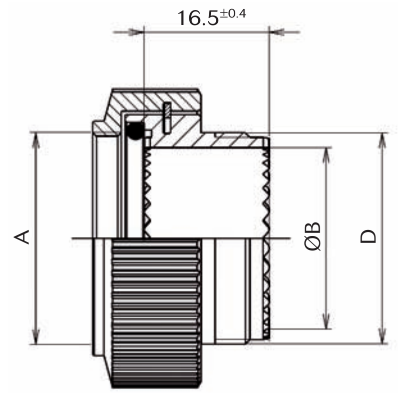
Material & Plating:
- **W:** Aluminum plated with Olive drab cadmium over electroless nickel - Salt spray 500 hours
- **F:** Aluminum plated with Electroless nickel
- **A:** Aluminum black annodized - Salt spray 500 hours
- **B:** Bronze

Dimension code:
- **01:** Only for Type 3, see table p.26

No digit for other types.

Backshells - Dimensions

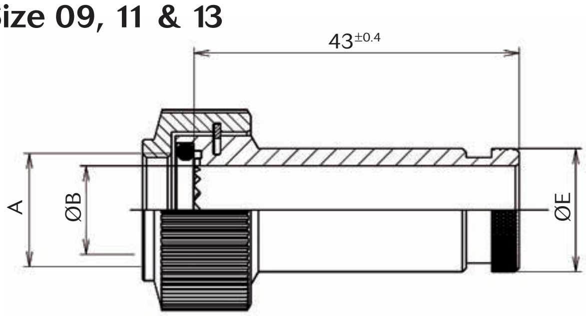
Backshell Type 1



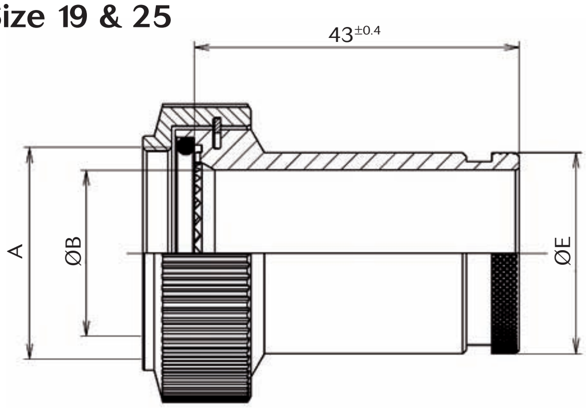
	Thread A	ØB$^{\pm0.25}$	Thread D
Size 09	M12x1	8.7	M12x1
Size 11	M15x1	11.7	M15x1
Size 13	M18x1	14.7	M18x1
Size 19	M28x1	24.0	M28x1
Size 25	M37x1	33.2	M37x1

Backshell Type 2

Size 09, 11 & 13



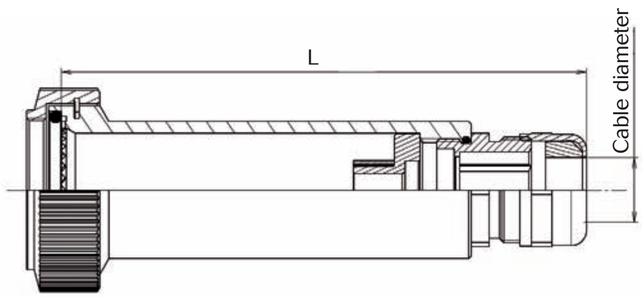
Size 19 & 25



	Thread A	ØB$^{\pm0.25}$	ØE$^{\pm0.2}$
Size 09	M12x1	8.7	16.7
Size 11	M15x1	11.7	19.7
Size 13	M18x1	14.7	22.7
Size 19	M28x1	22.0	26.6
Size 25	M37x1	32.2	36.8

All dimensions are in millimeters.

Backshell Type 3



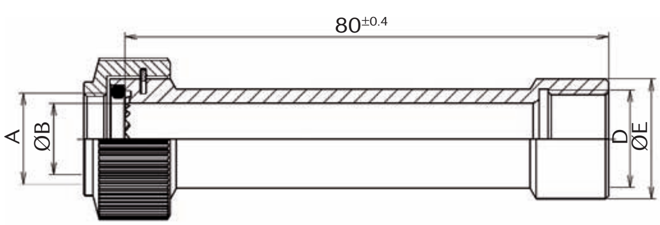
Cable diameter	Shell size / Thread									
	Bt 09 M12x1.5		Bt 11 M16x1.5		Bt 13 M16x1.5		Bt 19 M20x1.5		Bt 25	
	DC	L	DC	L	DC	L	DC	L	DC	L
3mm to 6mm	00	100	00	100	00	100	00	103	00	107
5mm to 8mm			01	100	01	100	01	103	01	107
6mm to 10mm							02	101	02	105
8mm to 12mm							03	102	03	106
9.5mm to 12mm									04	103
11.5mm to 18mm									05	109

Note: Same marquing as Type 4.

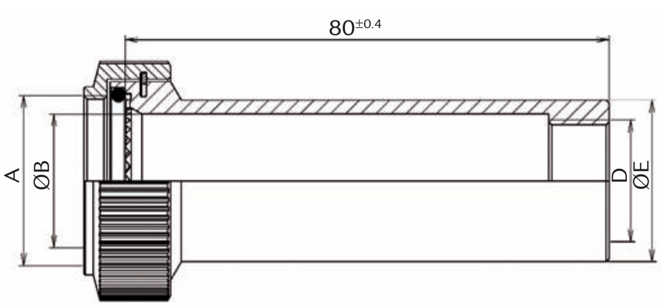
DC = Dimension Code

Backshell Type 4

Size 09, 11 & 13



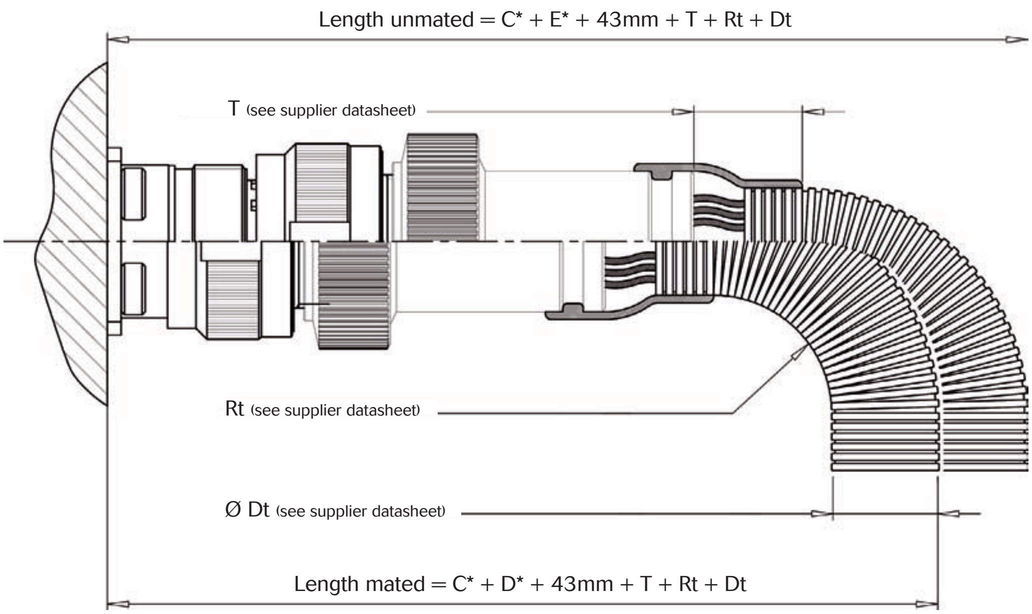
Size 19 & 25



	Thread A	ØB±0.25	Thread D	ØE±0.2
Size 09	M12x1	8.7	M12x1.5	16.7
Size 11	M15x1	11.7	M16x1.5	19.7
Size 13	M18x1	14.7	M16x1.5	22.7
Size 19	M28x1	22.0	M20x1.5	26.6
Size 25	M37x1	32.2	M25x1.5	36.8

All dimensions are in millimeters.

Total length with backshell



* See page 19

Backshell use examples

Type 2 - heat shrink boot not supplied

- 8DABE2AF13W with a straight boot on PMA tube



- 8DABE2AF13F with a right angled boot on tactical cable



Type 3 - supplied with cable gland

- 8DABE3AF13W01

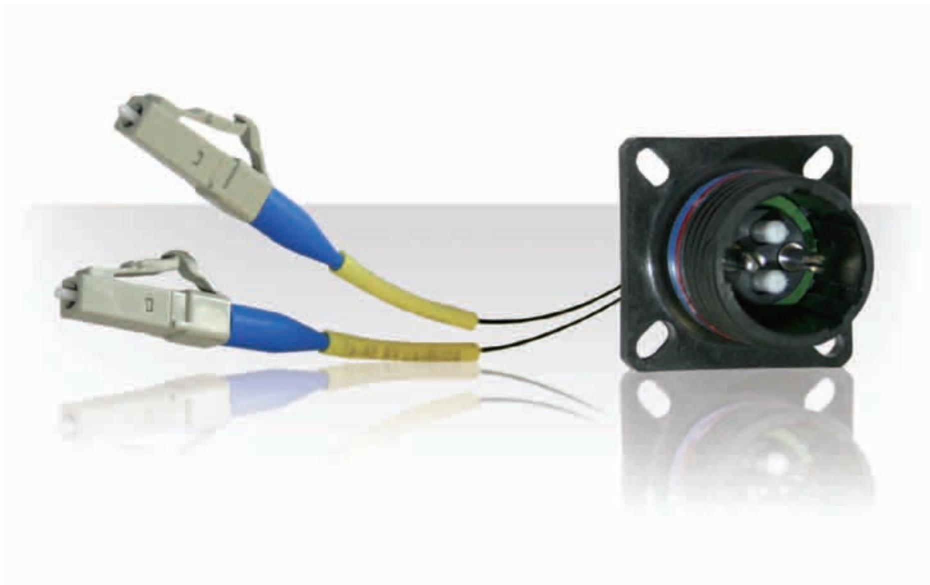


Type 4 - supplied without the specific adaptor

- 8DABE4AF13W with PMA tube adaptor



ELIO® Fiber Optic Technology



Harness & Patchcord

- Fiber optics termination has a major impact on the product performances and therefore has to be done carefully. Thanks to its in house fiber optics assembly line, equipped with the best control equipement, Souriau supports you from designing to supplying on a wide range of Fiber Optics assemblies, from the simple patchcords to the most complex tactical harness.

- Fiber Optic termination is very different from electrical termination and is much less known, require expensive invests… Souriau can help you in this area.

- 100% of harnesses and patchcords are tested with interferometer to check the positioning of the fiber inside the ferrule

- 100% visually inspected under microscope

- 30 years of experience in designing fiber optics connectors harnesses

- Test lab able to realize mechanical, environmental, climatic tests

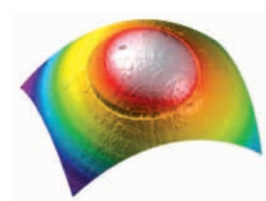
- Reactivity: in house production line close to the design office

- Souriau can terminate, polish and test many harsh environment and commercial grade connectors including:
  - EN4531 ELIO® contact
  - MIL-PRF-29504
  - ST
  - LC
  - FC
  - SC

- If your need is not shown in tables p.30 or for more complex assemblies, please consult us.

Interferometry

Technical measurement that calculates the topography of a surface.



The system gives in 3 dimensions the observed surface with curves similar to levels of a geographic map.
As a result it is possible to get the geometric parameters of the optical contact with an extreme accuracy.

Ordering information

	HA02	XXXX	XXX	M	A
Patchcord combination code: **XXXX:** See tables p.30					
Patchcord length: *In meter when possible. Examples:* *- for a 3 meter assembly, use* **003***(M) and not 300(CM)* *- for a 3.5 meter assembly, use* **350***(CM)*					
Length unit: **M:** Meter **CM:** Centimeter					
Patchcord version index					

Note: To create your patchcord part number, select your patchcord combination code in tables p.30 (1st contact - 2nd contact - Fiber Optic cable) and the length of your assembly on 3 digits in meter (M) or centimetre (CM). You must use meter when possible (see examples above).

Harnesses - Recommended cables

SOURIAU offers a wide range of cables, from low cost to high performance aeronautical cables.

Application	Standard	Cable code	Fiber type	Cable diameter	Temperature range	Tensile strength (N)	Number of ways	Bandwidth Limit (MHz.km)*	Attenuation (dB.km)*	Min. bend radius (mm)	Weight (kg.km)	Structure
For flying use	ABS0963-003LF, EN4641-102	FCABLE11	62.5/125	1.8	-55 to +125°C	250	1	400/1000	4.0 - 2.0	20	4	tight
	ARINC802	FCABLE21	62.5/125	1.8	-55 to +100°C	300	1	200/500	3.0 - 0.8	9	4.6	semi - loose
	EN4641-101	FCABLE41	62.5/125	0.9	-55 to +125°C	20	1	400/1000	4.0 - 2.0	10	1	tight
	EN4641-301	FCABLE22	50/125	1.8	-55 to +125°C	200	1	400/1000	2.5 - 1.0	20	4	tight
Harsh environment	-	FCABLE31	62.5/125	1.6	-20 to +70°C	200	1	200/500	3.5 - 1.0	30	4	tight
	-	FCABLE12	50/125	1.8	-10 to +70°C	200	1	1500/500	2.8 - 0.8	20	4	semi - loose
	-	FCABLE51	62.5/125	0.9	-40 to +85°C	100	1	400/1000	8.0 - 4.0	10	1	semi - loose
	-	FCABLE13	9/125	0.9	-40 to +85°C	10	1	No limit	0.6 - 0.6	15	0.4	tight
	-	FCABLE32	50/125	5.5	-40 to +85°C	1800	4	500/500	2.8 - 0.8	55	21	tight
	-	FCABLE23	9/125	5	-40 to +85°C	2000	4	No limit	0.6 - 0.6	50	28	tight

* 1st value at 850nm, 2nd value at 1300nm for multimode (1300nm and 1550nm for singlemode)
ELIO® is compatible with loose and tight structured cables. Tactical breakout cables are compatible with ELIO® with use of backshells.

Consult us for other harsh environment cables.

Standard length tolerances

Patchcord from 30 cm to 1 m	0 / + 5 cm
Patchcord from 1 m to 4 m	0 / + 10 cm
Patchcord from 4 m to 15 m	0 / + 20 cm
Patchcord > 15 m	0 / + 30 cm

Patchcord combination code

Most common cables with most common contacts

With cable FCABLE11

62.5/125, dia1.8 -55°C to +125°C ABS0963-003LF, EN4641-102

Contact 1 \ Contact 2	ELIO18NGLA	ELIO18NGNA	ELIO18NGSA	ELIO18WGLA	ELIO18WGSA	FC/PC	LC Simplex	Luxcis	SC	ST
ELIO18NGLA	0346	0186	0347	0114	0183		0348		0349	0350
ELIO18NGNA	0186	0220	0221	0190	0195		0211		0215	0206
ELIO18NGSA	0347	0221	0222	0191	0196		0212		0216	0207
ELIO18WGLA	0114	0190	0191	0111	0188		0109	0251	0110	0107
ELIO18WGSA	0183	0195	0196	0188	0116		0193	0254	0194	0192
FC/PC									0214	
LC Simplex	0348	0211	0212	0109	0193		0208		0209	0203
Luxcis				0251	0254			0263		
SC	0349	0215	0216	0110	0194	0214	0209		0213	0204
ST	0350	0206	0207	0107	0192		0203		0204	0124

With cable FCABLE12

50/125, dia1.8 -10°C to +70°C

Contact 1 \ Contact 2	ELIO18NGNA	ELIO18WGLA	ELIO18WGSA	FC/PC	LC Simplex	SC	ST
ELIO18NGNA					0310		
ELIO18WGLA		0260		0340	0284		0267
ELIO18WGSA				0301	0300	0269	0270
FC/PC		0285	0301				
LC Simplex	0310	0284	0300				
SC			0269				
ST		0267	0270				0286

Note: For other combination cable/contacts please send a request to contactmilaero@souriau.com

With cable FCABLE31

62.5/125, dia1.6 -20°C to +70°C

Contact 1 \ Contact 2	ELIO18NGLA	ELIO18NGNA	ELIO18NGSA	ELIO18WGLA	FC/PC	LC Simplex	SC	ST
ELIO18NGLA	0340	0153	0341		0342	0343	0344	0345
ELIO18NGNA	0153	0180	0181		0178	0171	0175	0166
ELIO18NGSA	0341	0181	0182		0179	0172	0176	0167
ELIO18WGLA				0351	0223	0352	0143	0106
FC/PC	0342	0178	0179	0223	0177	0170	0174	0165
LC Simplex	0343	0171	0172	0352	0170	0168	0169	0163
SC	0344	0175	0176	0143	0174	0169	0173	0164
ST	0345	0166	0167	0106	0165	0163	0164	0162

With cable FCABLE41

62.5/125, dia0.9 -55°C to +125°C EN4641-101

Contact 1 \ Contact 2	ELIO09NGLA	ELIO09NGNA	ELIO09NGSA	FC/PC	LC Simplex	SC	ST
ELIO09NGLA	0126	0230	0229	0228	0103	0227	0226
ELIO09NGNA	0230	0245	0244	0242	0235	0239	
ELIO09NGSA	0229	0244	0243	0241	0234	0238	
FC/PC	0228	0242	0241		0233	0237	0240
LC Simplex	0103	0235	0234	0233	0231	0232	
SC	0227	0239	0238	0237	0232	0236	
ST	0226			0240			0253

Note: For other combination cable/contacts please send a request to contactmilaero@souriau.com

FIBER OPTIC

ELIO® Fiber Optic Technology

Tooling & Accessories

Insertion & extraction tool

Tool needed for short boot and no boot contacts versions.

Tool for contact with boot *



P/N: ELI1-0231B

Tool for contact without boot



P/N: ELI1-0444A

* For long boot, tool recommended for 8 way high density insert and more.

Filler plug

MIL-DTL-38999 Series III/EN3645 - for high density cavities

Male filler plug
ELIO AFPP



Female filler plug
ELIO AFPS



Dummy contact

Arinc 600 Series - for Quadrax #8 cavities

Male dummy contact
ELIO A 001



Female dummy contact
ELIO A 002





ELIO® coupler

The ELIO® Coupler is a tool used to measure optical losses of multimode and singlemode ELIO® jumpers without introducing a bias in the measurement due to the connector's influence and without having to pull on the cable to remove the contact from the tool.

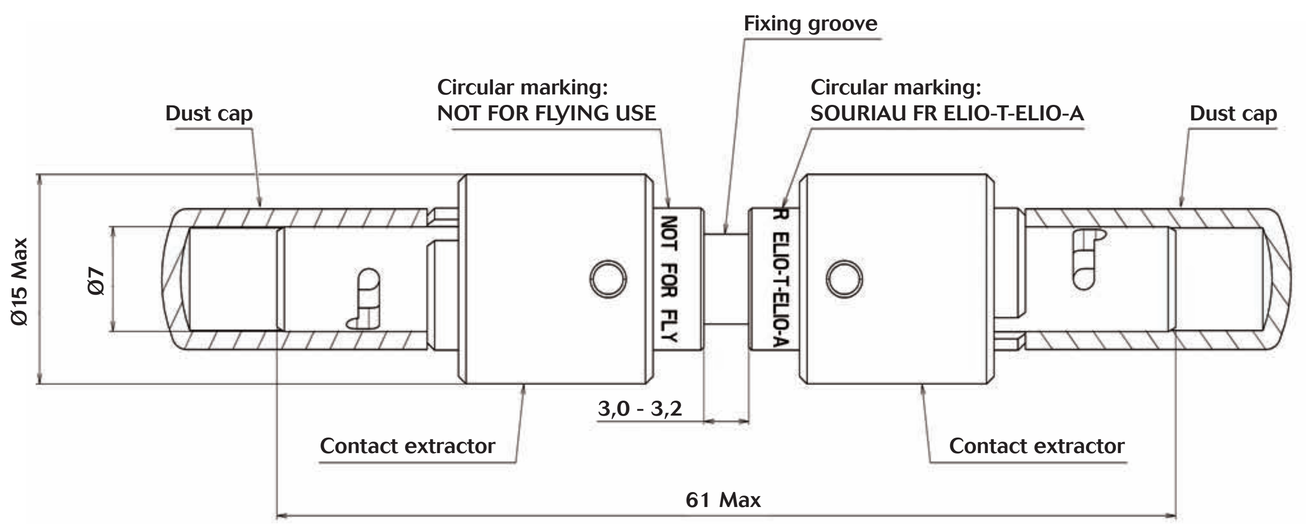
Delivered with dust caps.

NOT FOR USE IN FLIGHT.

Part number: ELIO-T-ELIO-A

Instruction sheet: The operating instructions and the cleaning instructions are described in **BT255A** Instruction sheet.

Dimensions



ELIO® mechanical splice



ELIO® sealed contacts terminated with the ELIO® cabling kit and connected through the ELIO® mechanical sleeve is a reliable and sealed solution to repair damaged optical links.

Part number: **ELIOELIO**

Note: Heatshrink boot and ELIO® contacts to be ordered separatly.

All dimensions are in millimeters.



ELIO® end face inspection tool

SOURIAU and JDSU teamed to develop a contact end face inspection tool suitable for use with ELIO® / EN4531 / ARINC801 technology.

Inspect before you connect.

Proactive inspection and cleaning can prevent poor signal performance and permanent damage to the contact end face.

Adaptors



ELIO® female adaptor

Part Number: FBPT-ELIO

To inspect female ELIO® cavities in all connector styles (Adaptors to be used with barrel assembly FBPP-BAP3)



ELIO® male adaptor

Part Number: FBPT-U25M-N

To inspect male ELIO® cavities in all connector styles and ELIO® patchcords (Adaptors to be used with barrel assembly FBPP-BAP3)



Barrel assembly

Part Number: FBPP-BAP3

Accessory to adapt ELIO® adaptors on the probe.

Accessories

Other accessories: please contact JDSU.

JDSU

Rugged contact inspection kit

Data sheet and user manual available at: www.jdsu.com/inspect

Part Number: FBP-ELIO-1

Dual magnification (200x/400x) probe and small rugged handheld display.

Contents:
+ HD3 display
+ 200/400x FBP analog probe
+ barrel assembly FBPP-BAP3
+ female ELIO adaptor FBPT-ELIO
+ male ELI0 adaptor FBPT-U25M-N
+ soft case



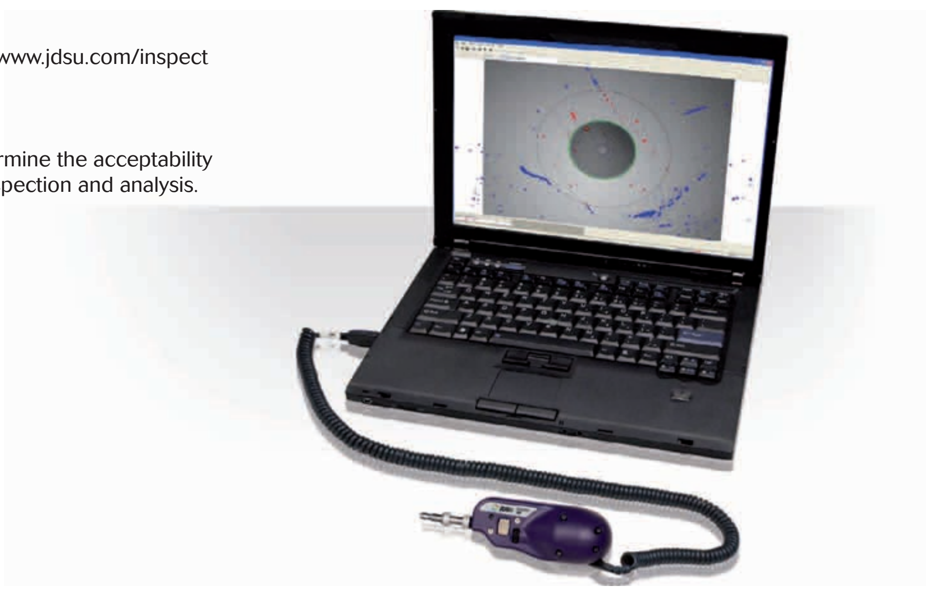
Automated contact inspection kit

Data sheet and user manual available at: www.jdsu.com/inspect

Part Number: FBP-ELIO-2

Kit to be used with a PC or labtop to determine the acceptability of optical end face through automated inspection and analysis.

Contents:
+ 200/400x P5000 digital probe
+ barrel assembly FBPP-BAP3
+ female ELIO adaptor FBPT-ELIO
+ male ELI0 adaptor FBPT-U25M-N
+ soft case



ELIO® Fiber Optic Technology

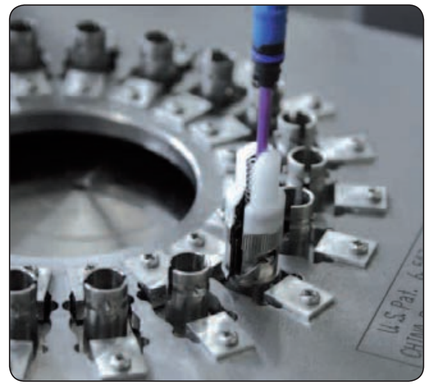
ELIO® adaptor for ST polishing fixture

With this adaptor, turn your ELIO® contact into an ST contact and save costs using standard ST polishing fixture.

Part Number: ELIOAST







Universal test connector



This connector can be connected to any other polarization. Ideal to limit the number of test leads.
The connector is customized with a green band and with a red band on the main polarization key to facilitate the mating.

Part Number:
Build your part number using the polarization letter «U» (see page 17).

NOT FOR USE IN FLIGHT.

SOURIAU

www.souriau.com

fiberoptics@souriau.com

Esterline Connection Technologies